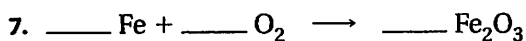
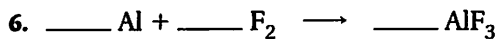
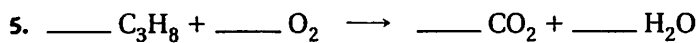
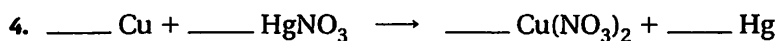
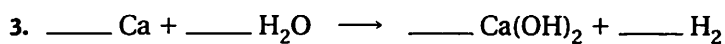
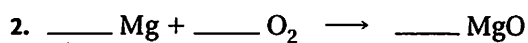
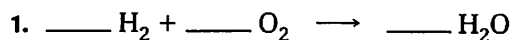


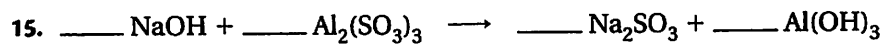
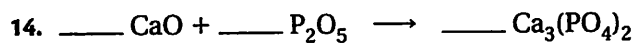
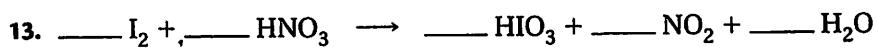
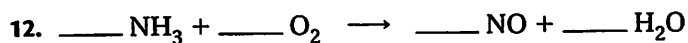
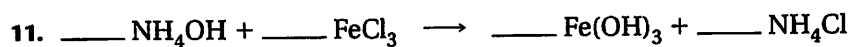
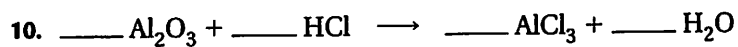
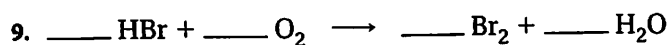
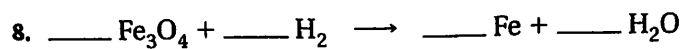
Unit 2

Remember: work L \rightarrow R
Balance H + O last
treat polyatomics
as 1. thing.

C.2 SUPPLEMENT: BALANCING EQUATIONS

Balance the following equations.





BALANCING CHEMICAL EQUATIONS

Name _____

Rewrite and balance the equations below.

1. $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$ _____
2. $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$ _____
3. $\text{NaCl} + \text{F}_2 \rightarrow \text{NaF} + \text{Cl}_2$ _____
4. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$ _____
5. $\text{AgNO}_3 + \text{MgCl}_2 \rightarrow \text{AgCl} + \text{Mg}(\text{NO}_3)_2$ _____
6. $\text{AlBr}_3 + \text{K}_2\text{SO}_4 \rightarrow \text{KBr} + \text{Al}_2(\text{SO}_4)_3$ _____
7. $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
8. $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
9. $\text{C}_8\text{H}_{18} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
10. $\text{FeCl}_3 + \text{NaOH} \rightarrow \text{Fe}(\text{OH})_3 + \text{NaCl}$ _____
11. $\text{P} + \text{O}_2 \rightarrow \text{P}_2\text{O}_5$ _____
12. $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$ _____
13. $\text{Ag}_2\text{O} \rightarrow \text{Ag} + \text{O}_2$ _____
14. $\text{S}_8 + \text{O}_2 \rightarrow \text{SO}_3$ _____
15. $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$ _____
16. $\text{K} + \text{MgBr}_2 \rightarrow \text{KBr} + \text{Mg}$ _____
17. $\text{HCl} + \text{CaCO}_3 \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$ _____

WORD EQUATIONS

Name _____

Write the word equations below as chemical equations and balance.

1. zinc + lead (II) nitrate yield zinc nitrate + lead

2. aluminum bromide + chlorine yield aluminum chloride + bromine

3. sodium phosphate + calcium chloride yield calcium phosphate + sodium chloride

4. potassium chlorate when heated yields potassium chloride + oxygen gas

5. aluminum + hydrochloric acid yield aluminum chloride + hydrogen gas

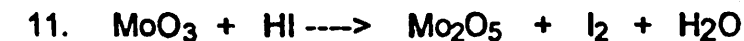
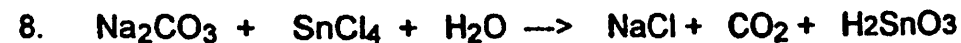
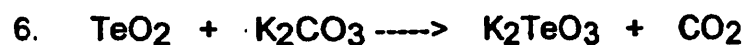
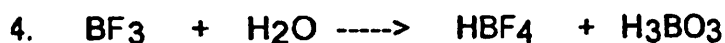
6. calcium hydroxide + phosphoric acid yield calcium phosphate + water

7. copper + sulfuric acid yield copper (II) sulfate + water + sulfur dioxide

8. hydrogen + nitrogen monoxide yield water + nitrogen

BALANCING CHEMICAL EQUATIONS

BALANCE THE FOLLOWING EQUATIONS BY SUPPLYING THE CORRECT COEFFICIENTS.
THE FORMULAS ARE CORRECT AS WRITTEN.



WORD EQUATIONS

NAME: _____

Write the word equations below as chemical equations and balance.

1 sodium chloride and sulfuric acid yield sodium hydrogen sulfate and hydrochloric acid

2 silver nitrate and copper yield copper (II) nitrate and silver

3 hydrogen and nitrogen yield ammonia

4 ammonium nitrate yields nitrogen and hydrogen and oxygen

5 sodium chromate and lead (II) acetate yield sodium acetate and lead (II) chromate

6 ammonia and oxygen yield nitric acid and water

7 magnesium and nitric acid yield magnesium nitrate and hydrogen

8 mercury (I) chloride yields mercury and mercury (II) chloride

9 sodium bicarbonate and sulfuric acid yield sodium sulfate and carbon dioxide and water

10 butane (C_4H_{10}) and oxygen yield carbon dioxide and water

11 carbon dioxide and calcium hydroxide yields calcium carbonate and water

12 carbon monoxide and oxygen yields carbon dioxide

Name _____ Date _____ Class _____

8-2 Practice Problems

1. Write the formula equation for the following reaction: Ammonia reacts with hydrogen chloride to form ammonium chloride.
2. When heated, calcium carbonate (CaCO_3) decomposes to form calcium oxide and carbon dioxide. Write an equation for this reaction.
3. Write the formula equation for the following reaction: Barium oxide (BaO) reacts with water to form barium hydroxide.
4. Acetaldehyde (CH_3CHO) decomposes to form methane (CH_4) and carbon monoxide. Write an equation for this reaction.
5. Write the formula equation for the following reaction: Zinc reacts with copper(II) nitrate ($\text{Cu}(\text{NO}_3)_2$) to form zinc nitrate and copper.
6. When heated, calcium sulfite (CaSO_3) decomposes to form calcium oxide and sulfur dioxide. Write an equation for this reaction.
7. Write the formula equation for the following reaction: Iron reacts with sulfuric acid (H_2SO_4) to form iron(II) sulfate (FeSO_4) and hydrogen gas.
8. Azomethane ($\text{C}_2\text{H}_6\text{N}_2$) decomposes to form ethane (C_2H_6) and nitrogen gas at 297°C . Write an equation for this reaction.
9. Write out the formula equation for the following reaction: Carbon monoxide reacts with chlorine gas to form phosgene (COCl_2).
10. Manganese(II) iodide decomposes when exposed to light to form manganese and iodine. Write an equation for this reaction.

Name _____ Date _____ Class _____

8-2 Practice Problems (continued)

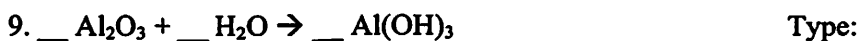
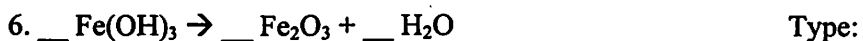
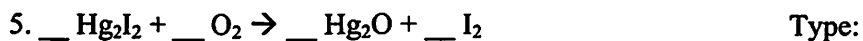
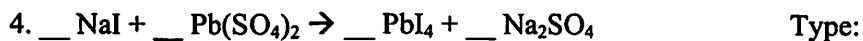
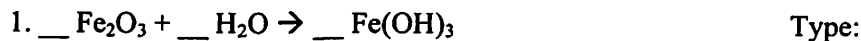
11. Write a balanced chemical equation for the reaction in which dinitrogen pentoxide (N_2O_5) reacts with water to produce nitric acid (HNO_3).
12. Magnesium reacts with titanium(IV) chloride (TiCl_4) to produce magnesium dichloride (MgCl_2) and titanium. Write the balanced equation for this reaction.
13. Write a balanced chemical equation for the reaction in which carbon reacts with zinc oxide to produce zinc and carbon dioxide.
14. Bromine reacts with sodium iodide to form sodium bromide and iodine. Write the balanced equation for this reaction.
15. Write a balanced chemical equation for the reaction in which phosphorus trichloride (PCl_3) reacts with chlorine gas to produce phosphorus pentachloride (PCl_5).
16. Phosphorus reacts with bromine to produce phosphorus tribromide (PBr_3). Write the balanced equation for this reaction.
17. Calcium hydride (CaH_2) reacts with water to produce calcium hydroxide (Ca(OH)_2) and hydrogen gas. Write the balanced equation for this reaction.
18. Write a balanced chemical equation for the reaction in which sulfuric acid (H_2SO_4) reacts with potassium hydroxide to produce dipotassium sulfate (K_2SO_4) and water.
19. Write a balanced chemical equation for the reaction in which propane (C_3H_8) reacts with oxygen gas to produce carbon dioxide and water.
20. Benzene (C_6H_6) reacts with oxygen gas to produce carbon dioxide and water. Write the balanced equation for this reaction.

Name _____
Chemistry AE
Chapter 8 Review Packet

Date _____

Use your ion sheet to help you complete the following questions. Remember that on the test, your ion sheet will not include the following ions: phosphate, nitrate, sulfate, hydroxide, ammonium, or carbonate. It will also be missing monatomic ions (ions formed from single elements) which can be determined using a period table. (Group 1 = 1+, Group 2 = 2+, Group 13 = 3+, Group 15 = 3-, Group 16 = 2-, Group 17 = 1-)

Balance the following equations and write the type of reaction.



Write a balanced equation from the word equation given. Write the type of each reaction.

1. Barium Chloride + Silver Nitrate \rightarrow Barium Nitrate + Silver Chloride

2. Sodium + Iron (II) Chloride \rightarrow Iron + Sodium Chloride

3. Magnesium Hydroxide + Sulfuric Acid \rightarrow Sodium Hydroxide + Water

4. Calcium Carbonate \rightarrow Calcium Oxide + Carbon Dioxide

5. Pentane (C₅H₁₂) + Oxygen \rightarrow Carbon Dioxide + Water

6. Aluminum + Iron (II) Nitrate \rightarrow Aluminum Nitrate + Iron

7. Water + Sulfur Trioxide \rightarrow Sulfuric Acid

8. C₃H₈ + Oxygen \rightarrow Carbon Dioxide + Water

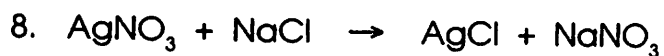
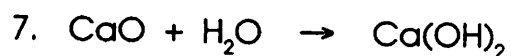
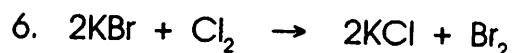
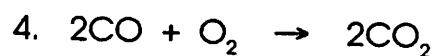
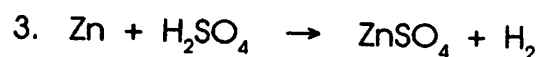
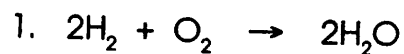
9. Sodium Carbonate + Potassium Phosphate \rightarrow Sodium Phosphate + Potassium Carbonate

10. Lithium Oxide + Water \rightarrow Lithium Hydroxide

CLASSIFICATION OF CHEMICAL REACTIONS

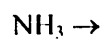
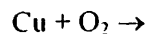
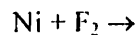
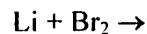
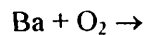
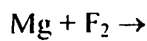
Name _____

Classify the reactions below as synthesis, decomposition, single replacement (cationic or anionic) or double replacement.

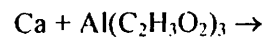
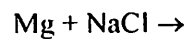
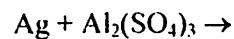
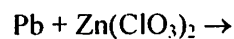
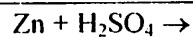


Predict the following reaction products

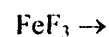
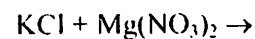
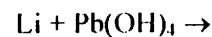
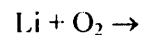
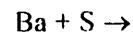
Type of the Reactions Below



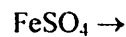
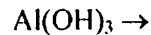
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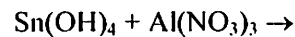
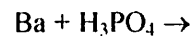
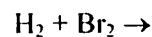
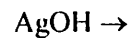
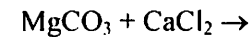
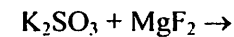
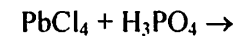
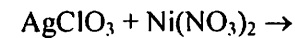
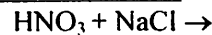
Random Reactions



Type of Reactions Below

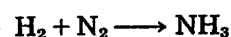
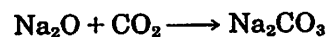
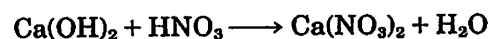
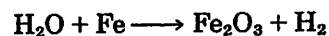
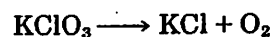
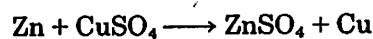
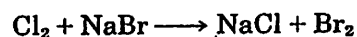
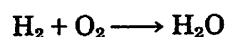
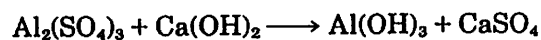
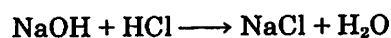
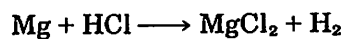
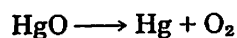


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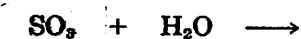
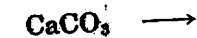
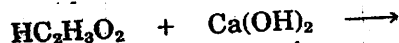
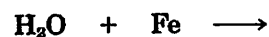
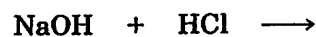
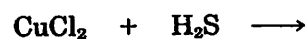
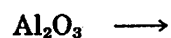
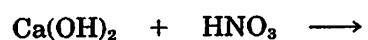



Identifying and Balancing Chemical Equations

Identify each of the equations below as synthesis, decomposition, single replacement, or double replacement. *Balance these too.*




Balance the following chemical equations, *after predicting the products.*





Word Equations

1. iron (II) chloride + silver oxalate yields iron (II) oxalate + silver chloride
 2. mercury (I) sulfate + lithium carbonate yields mercury (I) carbonate + lithium sulfate
 3. magnesium metal + copper (II) oxide yields magnesium oxide + copper metal
 4. nickel metal + copper (II) chloride yields nickel (III) chloride + copper metal
 5. lithium chlorate when heated yields lithium chloride and oxygen gas
 6. magnesium chloride + silver perchlorate yields magnesium perchlorate + silver chloride
 7. aluminum sulfate + sodium chlorite yields aluminum chlorite + sodium sulfate
 8. tin metal + lead (IV) hydroxide yields stannous (II) hydroxide + copper metal
 9. sodium metal + lead (II) chloride yields sodium chloride + lead metal
 10. sodium chlorate when heated yields sodium chloride and oxygen gas
- 

REACTION TYPES

Use your "Types of Chemical Reactions" worksheet to predict the products of the following chemical reactions, being sure to also use the activity series to identify whether the reaction would occur or not.

Synthesis (or Direct Combination) Reactions

1. Sulfur trioxide and water \longrightarrow
2. Aluminum and oxygen \longrightarrow
3. Iron(II) and chlorine \longrightarrow
4. Aluminum and nitrogen \longrightarrow
5. Nitrogen and hydrogen \longrightarrow
6. Carbon and oxygen \longrightarrow
7. Carbon dioxide and water \longrightarrow
8. Potassium and chlorine \longrightarrow
9. Sodium oxide and water \longrightarrow
10. Calcium oxide and water \longrightarrow

Decomposition reactions

1. Magnesium carbonate \longrightarrow
2. Copper (II) oxide \longrightarrow
3. Iron (III) chlorate \longrightarrow
4. Sulfuric acid \longrightarrow
5. Calcium hydroxide \longrightarrow
6. Ammonia \longrightarrow
7. Aluminum hydroxide \longrightarrow
8. Nitric acid \longrightarrow
9. Carbonic acid \longrightarrow
10. Sodium chlorate \longrightarrow

Single Replacement Reactions (check activity series as well)

1. Sodium and hydrochloric acid —>
2. Sodium and water —>
3. Zinc and sulfuric acid —>
4. Aluminum and Iron (III) oxide —>
5. Sodium bromide and chlorine —>
6. Sodium chloride and bromine —>
7. Magnesium and lead(II) sulfate —>
8. Water and iron —>
9. Iron (III) oxide and hydrogen —>
10. Zinc and copper (II) sulfate —>

Double Replacement Reactions

1. Calcium carbonate and hydrochloric acid —>
2. Carbon dioxide and limewater (calcium hydroxide) —>
3. Sodium bicarbonate and sulfuric acid —>
4. Ammonium chloride and potassium hydroxide —>
5. Lead(II) acetate and potassium carbonate —>
6. Sodium hydroxide and aluminum sulfite —>
7. Iron (III) bromide and barium hydroxide —>
8. Lead (II) nitrate and aluminum nitrate —>
9. Hydrochloric acid and aluminum sulfite —>

Combustion Reactions

1. Methane(CH_4) and oxygen —>
2. Glucose and oxygen —>
3. Butane (C_4H_{10}) and oxygen —>

Name _____
Predicting Reaction Products – Will Reactions Happen?

Single Replacement Reactions: Use the activity series to determine if the following reactions will take place. If the reactants are given as words, write the formulas. If there is a reaction, predict the products and balance the equation. If there is no reaction, writ NR or No Reaction.

1. $\text{Al} + \text{FeCl}_3 \rightarrow$
2. $\text{CdS} + \text{Sn} \rightarrow$
3. Magnesium metal and Zinc chlorite
4. $\text{Hg}(\text{NO}_2)_2 + \text{Ag} \rightarrow$
5. $\text{Pb} + \text{HClO}_4 \rightarrow$
6. Lithium metal and water
7. Platinum and oxygen gas
8. Zinc and water
9. Calcium chloride and iodine
10. Stannic bromide and fluorine

Double Replacement Reactions: Use the solubility table to determine if the following reactions will take place. If the reactants are given as words, write the formulas. If there is a reaction, predict the products and balance the equation. If there is no reaction, writ NR or No Reaction.

11. $\text{Ag}(\text{NO}_3)_3 + \text{KCl} \rightarrow$
12. $\text{Al}_2(\text{SO}_4)_3 + (\text{NH}_4)_2\text{S} \rightarrow$
13. $\text{NaOH} + \text{BaBr}_2 \rightarrow$
14. magneisum chlorate + barium oxide \rightarrow
15. stannous chloride + hydrosulfuric acid \rightarrow
16. zinc acetate + sodium phosphate \rightarrow
17. calcium nitrate + iron (III) chloride \rightarrow
18. copper (II) nitrate + sodium hydroxide \rightarrow
19. aluminum clorate + calcium iodide \rightarrow
20. ammonium iodide + mercury (II) nitrate \rightarrow